

to what is technically known as Old Irish. It is some consolation to Englishmen to know that English orthography is not quite the worst in the world, and that Tonalid seldom writes, but that when he does he spells more outrageously than the most wayward spelling-book ever known in the land of the Southron.

The philological articles in this review are very well done, and will be found very instructive, and specially adapted for beginners in the study of Celtic; but what we presume would most attract the readers of NATURE in this number is the tale which it contains, published for the first time. It was taken down some years ago in the Island of Tirree, the Terra Ethica of Adamnan's "Life of St. Columba." This is a summary of it:—The King of Ireland's heir was returning from hunting towards the evening, when he was overtaken by a shower, out of which came a big fellow with a fine steed and a marvelously handsome woman. The big fellow challenged the prince to play with him; he did so, and the big fellow was beaten, whereupon the prince took away his lady companion. He met the same big fellow another day and beat him again; according to the woman's advice he asked this time for the steed, which he took away with him home. The woman told him he would be beaten the next time, and how he was to act under his defeat. It happened just as she had told him, the big fellow laying him under charms, that he should have no rest or peace until he discovered how the Tuairisgeul Mor met with his death. He in his turn laid the big fellow under a charm not to leave the spot until he should return from the difficult expedition which was before him, and in which ever so many kings' sons had perished in former times. With the aid of the counsel of the woman he had taken from the big fellow, and with the assistance of her three wonderful brothers, to whom she recommended him, he managed to execute the first part of his business. On his way back on his horse, just as he had ridden through a wide loch and cut it into two, he was met by a youth who made unheard-of offers for the horse; according to previous advice he was to accept none of them, but to give away the horse only for a grey old man the youth had at home. The hero of the tale carries the grey old man on his shoulders and is guided by him, but is always to do the reverse of what he says. Each time this happened the old man would say, "That gives longer life to you and shorter life to me." At last they sat down in a house, and the old man had to relate the tale of his life, which was to yield the prince the information he was in quest of. He said that he was one of the three sons of a king, who were turned into wolves by their stepmother with her mallet of Druidism. They avenged themselves on her by killing her hens, until she got all the sportsmen in the land assembled to destroy them, when they were driven to shelter themselves under a big rock near the sea. There two died, and the surviving one, seeing a ship not far off, swam so near it that the captain ordered him to be picked up. By and by he became a pet of the captain's, who took him home to his wife. Some time afterwards she was confined of a boy, and the midwives, after dressing the baby, went to sleep, while the wolf lay quietly below the bed; ere long he saw a big fist coming in through the roof and snatching the baby away. When

the midwives woke they smeared blood on the animal, and laid the blame on it of having devoured the child, in order to clear themselves of neglect. The captain was loath to kill his pet wolf. The same thing happened another year; but the third time the beast watched, and beheld the fist coming in through the roof, when he seized hold of it, and tore it off at the shoulder; however, the other hand seized the child, but the wolf gave chase, and made its way into a little island with a cave in it where he found that the robber was a giant. The baby was under his arm, and the children previously stolen were playing in the cave. The giant being asleep, he got at his throat, and so the Tuairisgeul Mor found his death. After relating how the three children were brought home to their father, the captain, and how he himself recovered his human form, the old man said: "I am not to live any longer; throw me into yonder cauldron." The King of Erin's son now returned to the hill, where the big fellow who used to challenge him to play, lay with his bones by this time bleached by the wind and the rain; but when the prince told him how the Tuairisgeul Mor had been put to death he was gathered together, and rose from the hillock alive and well, while the young prince went home to marry the beautiful maiden who had enabled him to overcome all the difficulties which had met him.

We have read various tales at different times containing similar incidents, but the only one we shall mention here is that of Pwyll, Prince of Dyved, in Lady Charlotte Guest's "Mabinogion," where it is related how he lost his first-born the night he was born; and how another prince of South Wales used to lose the colts of a remarkable mare he had about the same time. At last the latter watched, and cut off the hand that was in the act of seizing a colt through a window; but what we wished to come to was this—the time is specified in the Welsh tale, namely the first day of May every year. Possibly this may suggest to somebody who has made a study of such legends what they really mean; but we abstain from giving any crude theories of our own on the matter.

OUR BOOK SHELF

Zwangsmässige Lichtempfindungen durch Schall und verwandte Erscheinungen auf dem Gebiete der anderen Sinnesempfindungen (Sensations of Light generated by Sound, and related Phenomena in the Sensations of other Organs of Sense). By E. Bleuler and K. Lehmann 8vo, pp. 96. (Leipzig: Fues's Verlag, 1881.)

As the authors (two medical students of Zürich) were conversing on chemistry in the autumn of 1878, Bleuler being asked what was the appearance of *celones* (substances of which *acetone* or *naphtha* is the type), got out of the difficulty at once by saying, "They are yellow, because their name contains an *o*." Lehmann, astonished, inquired what such an apparently absurd answer meant, and then found that from childhood Bleuler, on hearing, or even thinking of any vowel or word, immediately saw a colour, and that many of his relatives were in the same condition. Such was the origin of this investigation, and it is remarkable for having been carried on by one who always saw the colours (Bleuler) and one who never saw them (Lehmann). Such appearances of colour generated by sound are here called *photisms*, while sensations of sound generated by colour are termed *phonisms*, and both are called "secondary sensations or perceptions,"

the authors not knowing exactly in which category to place them. The authors have examined 596 persons (383 men and 213 women), and found among them 76 "positive" (that is, capable of seeing photisms), and 520 "negative" (that is, incapable of seeing photisms). This proportion is about 1 to 7. Particulars of the examinations of all are given. The photisms for the same sounds differ much from individual to individual, but remain constant for the same individual, as shown by receiving identical answers to thousands of questions after intervals of more than a year. The photisms are not always distinct or of definite forms, but are projected on to the spot whence the sounds arise. Other senses produce sensations of colour as well as hearing; thus there are taste and smell photisms. There are also emotional photisms. The authors are unable to give any explanation, but they are clear that simple association does not suffice, and they examine a number of suggestions made to them, showing that they do not account for cases observed. They themselves think that the solution of the difficulty is to be sought in the nature of nervous processes, but they do not admit that "secondary sensations" are psychopathological. This little book is full of curious and interesting details evidently connected with Francis Galton's "mental images," and localisation and sometimes colouring of numbers in the mind's eye. The following account of the general conclusions obtained, given on the last page of the book, will show what a curious page of nervous physiology is here opened out.

1. *Bright photisms* are excited by musically high sounds, severe pain, sharply-defined sensations of taste, small forms, pointed forms. *Dark photisms* by the contrary.

2. *Musically high phonisms* are excited by bright light, clear definition, small forms, pointed forms. *Deep phonisms* by the contrary.

3. Photisms with sharply defined forms, small photisms and pointed photisms, are all excited by the sensations of musically high sounds.

4. Red, yellow, and blue are common colours of photisms; violet and green are rare, blue is of medium frequency.

5. Thorough agreement of the separate assertions of different individuals does not occur.

6. Unpleasant primary sensations may excite pleasant secondary sensations, and conversely.

7. Secondary sensations are scarcely more influenced by psychical circumstances than are primary sensations; and they are inalterable.

8. The disposition to have secondary sensations is hereditary.

9. Traces of secondary sensations are widely spread. Well-developed secondary sensations could be established to exist for one in eight persons examined.

10. Secondary sensations are not more frequently met with in psychopathically afflicted persons than in those of a normal condition.

A List of European Birds. By Henry E. Dresser. (London: Published by the Author, 1881.)

THIS "List of European Birds," including all the species found in the Western Palearctic region, has been very carefully revised by Mr. Dresser, and appears opportunely on the completion of his great work on the "Birds of Europe." It will be most useful as a check list for labelling, or for reference in making exchanges of birds and birds' eggs. The classification is the same as that adopted in the "Birds of Europe," and follows that of Prof. Huxley, which still appears to Mr. Dresser to be the best as yet elaborated. The species are numbered consecutively, in order to facilitate reference. A very few alterations in the nomenclature have been made: 623 species are enumerated, and the list is published at the low price of one shilling.

The Seals and Whales of the British Seas. By Thomas Southwell, F.Z.S. (with Illustrations). (London: Jarrold and Sons, 1881.)

THIS neat little volume, though it adds little if anything to our scientific knowledge of the British seals and whales, will be welcome to many as telling a good deal about these interesting mammals which could only be found after a prolonged search through many of our scientific periodicals. It will form a pleasant addition to sea-side libraries, and, telling what is known about these creatures, it may thus be the means of indicating what is not known about them, and so do something towards advancing knowledge. A good deal of the information in this little volume appeared originally in the pages of *Science Gossip*; it has however not only been carefully revised, but several additional woodcuts have been added. It has also had the supervision of Mr. J. W. Clark and of the late E. R. Alston.

The more advanced student would have liked a short chapter on the literature relating to our British marine mammalia, which perhaps in a future edition might be given, and an analytic key to the species of British cetacea would be a great help to those living in suitable localities who would venture to take up the study of these very interesting but not easily preserved creatures.

A Sequel to the First Six Books of the Elements of Euclid, containing an Easy Introduction to Modern Geometry, with numerous Examples. By John Casey, LL.D., F.R.S. (Dublin University Press Series, 1881.)

THERE are many geometrical results which are not directly formulated or stated in Euclid's Elements, which are yet constantly turning up in the solution of geometrical problems, and it is very desirable to have a handy book of reference, the propositions in which may be cited, so obviating the necessity of a lengthy proof. The "Exercises on Euclid and in Modern Geometry" of Mr. McDowell is a useful book for this purpose, as all the propositions are fully worked out. Dr. Casey, in the course of teaching, has frequently had to contend against the defect above referred to, and had to interrupt the course of the demonstration of an advanced proposition by turning on one side to prove some well-known result, because he could not cite Euclid as an authority for it. This handy little book, which appears to us quite up to the level of the author's reputation as a geometer, is intended to meet this felt want, and paves the way to a deeper study of the modern geometry contained in the exhaustive works by Chasles, Townsend, Mulcaby, and many Continental writers. A great number of classical problems are led up to, and they themselves discussed and established. The size and style of the book fit it for use in the higher forms of our schools, and more advanced students will find it a convenient book for citation.

Accented Four-Figure Logarithms and other Tables for Arithmetical and Trigonometrical Purposes and for Correcting Altitudes and Lunar Distances, with Formulae and Examples. Arranged and accented by Louis D'A. Jackson. (London: W. H. Allen, 1881.)

MR. JACKSON is an experienced editor and computer of logarithmic tables, having already published "Accented Five-Figure Logarithms," "Pocket Logarithms and other Tables," &c. Different calculations require different degrees of approximations, and the computer learns by experience which kind of tables are best suited for the end he has in view. In his Introduction our author carefully discusses the question, and states to what extent the present tables are efficacious. His system of accentuation appears to be a good one. Certainly it insures a much closer degree of accuracy than is to be got from ordinary four-figure tables. Each logarithm, on its face, shows whether it is in excess or in defect of the true value (obtained by taking a greater number of figures), or equal thereto. The range of error seems to be reduced to a